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ORIGINAL COMMUNICATIONS.

"CREED OF THE NEW DEPARTURE," AND SUMMATION OF PRINCIPLES RELATING TO FILLING TEETH.

BY MARSHALL H. WEBB.

The "creed of the New Departure" was first made known by Dr. Flagg, at the meeting of the New York Odontological Society, November 20, 1877. "The time-honored and ordinarily 'accepted creed' of dentistry" was then given, also, which, if not prepared for the occasion—if not "time-honored"—had evidently been modified by the one who framed and announced the "creed of the New Departure."

Some parts of the "accepted creed" are not acceptable to first-class operators, even though the creed may, as a whole, be "ordinarily accepted" or approved by the majority of practitioners.

The following ten articles are given as a summation of some of the principles which ought to guide all practitioners in the filling of the teeth, and the practice of the finest operators indicates that they are guided by such principles.

That the reader may compare the "creed of the New Departure"

with the principles by which fine and first-class operators are guided, each article of this creed will here be given with that part of the summary of principles which corresponds in number with it. Each operator who may be in doubt about the methods presented can thus more fully decide, or be enabled now to determine which constitutes *the better practice.*

ARTICLE I. *New Departure.*—"In proportion as teeth need saving, gold is the *worst* material to use."

ARTICLE I.—*The Better Practice.*—Gold, *properly used,* is the *best* known material for the permanent preservation of the teeth.

ARTICLE II. *New Departure.*—"Neither 'contouring filling' nor 'separating teeth' has much to do with the arrest of decay."

ARTICLE II. *The Better Practice.*—With restoration of contour so complete as to keep the margins of enamel free from contact with the tooth adjoining, extension of decay is prevented.

ARTICLE III. *New Departure.*—"Failure in operations is mainly due to incompatibility of filling material with tooth bone."

ARTICLE III. *The Better Practice.*—"Failure in operations is mainly due" to the gold not being closely packed against the dentine and enamel at every part, so that fluids enter at such part and further decay takes place—the failure of a filling, therefore, is "mainly due" to the *incompatibility* of the operator with his work.

ARTICLE IV. *New Departure.*—"A tooth that can be so treated as to be satisfactorily filled with anything, is worth filling."

ARTICLE IV. *The Better Practice.*—A cavity that can be "satisfactorily filled with anything, is worth filling" *with gold*—the contour of any tooth can be restored with gold if the operator has the ability to properly apply the rubber dam and perform the operation.

ARTICLE V. *New Departure.*—"Skillful and scrupulous dentists fill with tin covered with gold, *thereby* preventing decay, and pulpitis, and *thereby saving the tooth.*"*

ARTICLE V. *The Better Practice.*—Skillful operators first see that parts are in normal condition, and then so perform operations with gold as to prevent further decay, or they fill with oxychloride of zinc and cover it with gold to avoid shock from changes of temperature.

ARTICLE VI. *New Departure.*—"A filling may be the *best* that is known for the tooth, *and yet leak badly.*"

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*If "gold is the *worst* material to use," (Art I., "*New Departure*"), why do "Skillful and scrupulous dentists" even as much as *cover* tin *with gold*, . . . "*thereby saving the tooth*" (Art. V., "*New Departure*")?—M. H. W.

ARTICLE VI. *The Better Practice.*—A filling *material* " may be the *best* that is known for the tooth, *and yet leak badly*," because of " defective manipulation," but to save the tooth that best material, gold, must be so inserted as to prevent leakage.

ARTICLE VII. *New Departure.*—" Gutta-percha, *properly used*, is the *most permanent* filling material we possess."

ARTICLE VII. *The Better Practice.*—" Gutta-percha, *properly used*," is a *good* filling material, but it serves a temporary purpose only, excepting where it is free from the friction of mastication, from the use of brush and powder, and from floss-silk, when it may prevent decay for several years.

ARTICLE VIII. *New Departure.*—" A *poor* gutta-percha filling, *in its proper place*, is better than a *good* gold one."

ARTICLE VIII. *The Better Practice.*—" A *good* gutta-percha filling, *in its proper place*, is better than a *poor* gold one," and better than any other material inserted in a careless and imperfect manner.

ARTICLE IX. *New Departure.*—" Amalgam, *per se*, is an *excellent* filling material."

ARTICLE IX. *The Better Practice.*—The *excellence* of " amalgam, *per se*," consists only in enabling an operator to fill a cavity with it, when he might otherwise resort to extraction. [Amalgam shrinks and fluids penetrate between it and enamel, which becomes fractured little by little; oxidation takes place, and, whilst slightly retarding decay, the oxide discolors tissue, especially the dentine in the teeth of young persons, and the filling presents an unsightly appearance.]

ARTICLE X. *New Departure.*—" The use of 'plastic' filling materials tends to lower that Dentistry which has for its standard of excellence 'ability to make gold fillings,' but very much extends the sphere of usefulness of that Dentistry which has for its standard of excellence '*ability to save teeth.*' "

ARTICLE X. *The Better Practice.*—" The use of 'plastic' filling materials " does not tend to the exercise of that care, and to the development of that skill, which is necessary for the successful practice of " that Dentistry which has for its standard of excellence 'ability to make' *good* 'gold fillings,' " and an operator with such ability cannot only so perform operations with gold as " *to save teeth*," but he can insert any other material more perfectly than any one who has not the " ability to make gold fillings."

In connection with these articles it may be best to state that, in cases where calcification is imperfect and solution of the lime-salts of

the teeth takes place rapidly, it is well to keep cavities filled with gutta-percha or oxychloride of zinc until there is more complete deposition of lime-salts in the basis-substance of the enamel and dentine. If a permanent operation is to be performed with gold before perfect calcification takes place, it is absolutely necessary to free the edges of enamel and to keep the margins from contact by full and complete restoration of the contour of missing tissue.

Various methods have been devised or adopted for the purpose of lessening the time necessary to insert fillings, and to make them simple, easy and cheap, by the use of amalgam or other plastic materials, but, in addition to the excellent judgment and ability required, sufficient time must be taken and the use of gold is necessary for the performance of really fine, beautiful and permanent operations.

In literature, sculpture, painting and music, and in operations such as dentists ought to perform, it is not the aim of a Dryden, a Michael Angelo, a Raphael, a Beethoven, or a Varney, to write, carve, paint, bring forth in "concord of sweet sounds," or to produce in gold, that which requires but little time and skill, and is simply cheap, and unartistic, but perfect and beautiful.

EUCALYPTOL AND GUTTA-PERCHA IN ROOT CANALS.

BY GEO. L. PARMELE, M. D., D. M. D.

In the New England Journal of Dentistry for April, of this year, I made slight mention of eucalyptus in the treatment of devitalized pulps, and of its use in combination with gutta-percha for filling pulp canals. In the May number of the same journal, I was requested by D. D. S. to give more in detail my method of preparing and using eucalyptus and gutta-percha; also if, in my opinion, cotton moistened in eucalyptus would not serve equally well for the same purpose; and, furthermore, if I had ever used the remedy in cases of abscess. Now, in order to "kill two birds with one stone," it is my purpose in a very few words to answer D. D. S., and at the same time fulfill my promise to write a paper for your society.

Before proceeding to consider the practical application of the remedy in question, it is well, perhaps, to offer a few remarks concerinng the remedy itself.

In the order *myrtaceæ*, we find a genus of trees mostly indigenous to Australia and the Indian Archipelago, known as eucalyptus, containing one hundred recognized species, among which mention may

be made of Eucalyptus resinifera, E. mannifera, E. dumosa and E. globulus.

E. resinifera or brown gum-tree of New Holland, and some other specimens, yield a concrete juice known as Botany Bay Kino.

E. mannifera, growing in New South Wales, yields a sacharine substance which, from its resemblance to manna, is so called.

The same product is obtained from E. dumosa, which is a native of New Holland.

It is, however, from the leaves of the eucalyptus globulus, or blue gum tree of Australia, that we derive the product now under consideration. It is a tree of large size and of rapid growth; the wood, being hard, is largely employed in ship building. The trees of this species are of the largest in the world, and have attained a height of 375 feet.

The leaves from which the medicinal properties are obtained are leathery in texture, and studded with glands, which exude a fragrant, volatile oil. The leaves of young trees are large, sessile and of a dull green, covered with fine white powder, easily rubbed off. Those of the older trees are ensiform, measuring from six to twelve inches in length.

The trees have lately been planted along the line of the Central Pacific railway, in California, for the purpose of lessening the liability to droughts. They grow as well in a damp as in a dry and exposed soil, and bear cold very well, having resisted a temperature of 21° F. The Detroit Lancet says that Dr. D. J. Snyder, of Scio, Ohio, will furnish seeds of the eucalyptus globulus, with directions to plant, to any medical gentleman who desires to attempt the effort to raise them. He is sure, that if the plants are kept for the first winter in a hot-house, they will gain strength sufficient to enable them to endure the following winters.

These trees are said to have the property of rendering damp, marshy districts free from miasma, and many millions of them have been planted in Algeria, France, Italy, Cyprus, and other countries.

This property is ascribed to the drainage effected by their roots, rather than to any antiseptic exhalations from their leaves. The leaves have long been used in Australia, with great success, in fevers.

The preparations in use of eucalyptus are *tinctura eucalypti*, *extractum eucalypti*, and *eucalyptol*, which latter is the essential oil of the leaves, and the physiological actions of eucalyptus are due to this oil. It has a warm, aromatic taste, and increases the flow of the

saliva. Among the diseases in which it is said to be used with benefit are pulmonary gangrene, hay fever, palpitations frequent in women about the change in life, hysteria, etc. But the most important use (internally) is in treatment of catarrhal affections of the mucous membranes; especially catarrh of the bladder.

As an antiseptic of high order in the treatment of foul ulcers, abscesses and sloughing wounds, the superiority of eucalyptol has already been proven both in this country and in Europe. It is a much more powerful antiseptic than carbolic acid; its effects more permanent; it has no irritating or caustic action, and thus possesses all the advantages of an antiseptic, with none of its unfavorable properties.

While a few object to its taste, I find that nearly all find its taste far less objectionable than carbolic acid. Mr. David Hepburn, in a paper entitled "Chronic Suppuration Connected with the Teeth," read before the Odontological Society of Great Britain, gives great praise to eucalyptol for its marvelous power as an antiseptic agent. In a case of abscess, where there had been an incessant discharge of putrid pus in large quantities, he found that eucalyptus rendered everything pure as nothing else could do, and whenever its use was discontinued there was a return of the discharge. Dr. Rollins, of Boston, suggests its use in a mouth wash, as follows:

℞. Sodæ boratis, 15 grams;
Olei eucalypti, 2 grams;
Magnesiæ carbonatis, 4 grams;
Aquæ, 1000 grams.

M.

A. S. Underwood, M. R. C. S., L. D. S., England, in the Monthly Review of Dental Surgery (London), recommends it very highly in treatment of dead roots, and abscesses about the mouth, using it alone or in combination with iodoform. I have used iodoform with it, but thinking I succeed as well with eucalyptus alone, and as the smell of iodoform is so disagreeable and sickening, I have abandoned this combination. For the benefit, however, of those who desire to try it, I give the following formula, taken from the Louisville Medical News, which it claims will effectually mask the odor of iodoform:

℞. Iodoform, ℥ss;
Oil lavender, gtt x;
Alcohol, fl℥ii;
Glycerine, fl℥vi.

M.

I have used eucalyptus now for two years, and the results obtained in the treatment of dead pulps, alveolar abscesses, and diseased antra, warrant me in highly recommending it to my brother practitioners. I use an extract of the leaves prepared by Sander and Son, Sandhurst, Australia, they being, I think, the sole and exclusive manufacturers. It should not be confounded with *ol euc. c. ligno* (wood oil). It can be had of reliable druggists in any large city.

It is my custom, after a pulp has been *thoroughly* devitalized, to carefully adjust the rubber dam and so prepare the crown that free and as direct access as possible be obtained to the pulp cavity and canals; then, by means of the usual nerve instruments, I carefully enlarge the canals and remove all that is possible of the devitalized pulp. Having accomplished this, I repeatedly wash out the canals with alcohol carried up by means of cotton on fine broaches, and pumped up also. Then, by means of fine needles of bibulous paper and the hot-air syringe, I thoroughly dry the cavity and canals. My next step is to force eucalyptus up in the same manner as the alcohol. If there has been no periodontitis, I at once proceed to introduce gutta-percha into the roots. This I accomplish by warming small bits of gutta-percha and, with the aid of a spatula, rolling them on a porcelain slab until they are reduced to fine wires, pointed at one end. These gutta-percha wires I dip, while warm, in eucalyptus, and immediately insert them into the canals, forcing them up to place with fine, smooth broaches. It will be found that enough gutta-percha will be dissolved to form a paste-like mass, which will be forced up into the minutest parts of the canal. This part of the operation should be gently performed, so as to avoid forcing beyond the apex. In cases where there has been previous trouble, I pack the roots with cotton and eucalyptus, and insert a trial filling, for a few days, of gutta-percha. After packing the canals, I generally dry out, and fill the remainder of the cavity with oxyphosphate cement until such time as I am prepared to insert the permanent filling in the crown. Always, after finishing the root fillings, I paint gums with iodine. It was formerly my custom to cleanse the roots slowly, at different sittings, but I think I have been more successful since I adopted the immediate and thorough method. My records show that in the past two years I have developed no after-inflammation, which was not easily arrested. Where constitutional treatment is required to arrest periodontitis, I obtain the best results from aconite and belladonna.

In reply to D. D. S's second question, I will simply say that I con-

sider the *permanent* filling of root canals with cotton, and any medical preparation, a pernicious custom, although I have seen cases where it has been successfully accomplished for years. In the treatment of abscesses, I generally use eucalyptus in the same manner as carbolic acid, or any other antiseptic. I find that a very convenient way to dilate the fistulous opening of an abscess is by using suitable sizes of violin strings, dipped into eucalyptus, and immediately introduced into the fistula as far as possible, cutting off even with the opening of the fistula. The next day it will be found swollen, and the fistula dilated. If necessary, a larger size can then be introduced until the desired dilation is accomplished. Small medicated bougies introduced into these fistulous openings are often a convenient method of medication.

The preceding paper was presented to, and read before, the Massachusetts Dental Society, at its seventeenth semi-annual meeting, Boston, June 8 and 9, 1882.

SOCIETIES.

CONNECTICUT VALLEY DENTAL SOCIETY.

The semi-annual meeting for 1882 was held at Amherst, Mass., June 29 and 30.

The morning session—first day—opened at 11.30 o'clock, President C. Fones, of Bridgeport, Conn., in the chair.

The secretary's report of the annual meeting for 1881 was read and accepted.

Under Miscellaneous Business, the following was adopted relative to section reports:

Resolved, That the reports of the various Section Committees be received in their respective order, with the exception of Section 1, which shall be the regular order for the evening session, and that the full report of each section be heard previous to discussion of said reports.

Resolved, That the presentation and discussion of reports be limited to two hours each.

Resolved, That the time of meeting of sessions be as follows: Afternoon session to commence at 2 o'clock; close at 6 o'clock. Evening session commence at 7.30; close at 10. Morning session, second day, commence at 10; close at 1 P. M.

Dr. Stockwell, who offered these resolutions, that were adopted,

also suggested to the assembly that the convention be in readiness on Friday, at 8.30 A. M., to proceed in a body from the hotel to the various college buildings, devote one hour to the inspection of museum, various cabinets and art gallery—the convention to be met there by carriages, at 9.30, furnished by courtesy of Dr. Vincent, and enjoy a half-hour's ride, returning to the hotel in season for the opening of the morning session.

Voted, That the secretary be empowered to issue delegate certificates to members to the American Dental Association meeting, at Cincinnati, August 1, 1882.

Voted, That the regular order be suspended till the afternoon session, for the benefit of those not yet arrived, and take up for discussion "Incidents of Office Practice."

DR. VINCENT: To start the wheel, I would like to ask if any gentleman present, in extracting a temporary tooth, has pulled out the germ of a permanent tooth?

DR. MORGAN: I sometimes pull out more than I can answer for. I cannot always tell precisely what I do pull out.

DR. STEBBINS: I would ask if Dr. Vincent could explain and give an account of the little girl that was once brought to me with a swollen face. I think the left inferior second temporary molar tooth was giving the trouble. The physician wanted the tooth extracted. The tooth was extracted and the germ of the bicuspid was in the abscess sac. I would like to find out more about it.

DR. VINCENT: It is a long story. The parents had spent several hundred dollars in doctoring at Springfield when I saw the case. When I first saw the child, I found that the left inferior central incisor was taken out, but there was still a discharge from the face. The child still had good looks, and I suspected necrosis of the under jaw, but had no idea what the trouble would be. The child came to me over two hundred times. I cut away from the condyle to the mesial line nearly the whole of the bone, trying to leave a little. I think I destroyed every germ of the permanent teeth. The child, as far as my part is concerned, is well to-day; she has three sores on the hand, arm and foot. This little girl bothered me terribly. I put setons in the jaw, but kept away from the inferior dental nerve. If you think best, I will bring her to-morrow. She had anchylosis of the joint where she had a former necrosis. I had to be very careful not to break the remnant of the jaw.

DR. STOCKWELL moved that other gentlemen present, but not members of the society, be entitled to the floor. (Voted.)

DR. W. H. ATKINSON (New York): This case is representative of cases typical in clinics and hospitals, and the question as to the cause, etc., depends on our knowledge of the history and the origin of the child, and on the doctrine about the origin of scrofula. In some colleges they say that there is no scrofula that did not originate primarily from syphilitic poison. This is too occult a subject to enter into in an off-hand speech. To be competent to say anything in this line, we have to spend a lifetime in such investigations. The question which was first suggested, as to taking out the germ of the permanent tooth with the temporary tooth, is of great importance to every dentist, and every dentist who understands the history of a tooth can determine whether it is safe to extract a temporary molar or not, which alone can involve the germ of the permanent tooth between its roots. The roots of the temporary molar are large and flattened, embracing the territory of the coming bicuspid. There is another question suggested: if the tooth would not have been removed by normal absorption, and if it was not extracted too soon. To decide this depends, of course, on the age of the child.

DR. VINCENT: It is immaterial whether the child was ten or two years old. If necrosis of the jaw was there I would not hesitate to pull out a tooth. It was pulled out because of inflammation from the outside. I could have done it with my fingers.

DR. ATKINSON: That is correct. At the age of five years, the bicuspid has five and one-half years to grow before it is erupted. There is no general rule as to the period when an organ or tissue becomes mature; we have to speak generally and in possibilities. At that time the calcidulous cyst, in which the germ is forming, was not yet formed. As to the propriety of taking teeth from a necrosed jaw, without the sequestrum, is too large a field, and involves a knowledge of which only a little has been revealed. The old idea that a sequestrum should be formed before an attempt of removing is made, will be found to have overloaded the literature, and it has been my own misfortune to have controverted the method of early operations in treating necrosis. The territory of the necrosis has a point at which it starts. If a nerve or tract of vessels is deprived of supply, a derangement will be set up by the disturbance of the nutrition, and one must be well posted in physiology to determine whether it is pathological or not. The question of inflammation comes up here, which is difficult to determine. The first step from the normal is the arrest of nutrition, and obstruction of the nutrient current which is concerned

with the local embryonal corpuscles. The obstruction may result in retrograde metamorphosis of the parts by returning to the embryonal condition, by which the tissue may be reformed, or, if we suppose it to break down, there is a point where it is legitimate to call it inflammation; there are four steps in inflammation to render it pathological. If we understand a burning as a chemical change of the elements which constitute a substance, we have to distinguish two kinds; one is where you get ashes, the other is slow combustion, where you get hydrogen removed and carbon left. Now the charcoal left in making charcoal is similar to the charred remains in the necrosis.

DR. VINCENT: With that inflammation the tooth was so involved that there could not be a particle of bone left.

DR. ATKINSON: The bone is dissolved by retrograde metamorphosis; the lime-salts of the bones are dissolved, the bone is melted. It is no longer bone, but the elements are there; they are not reckoned chemically as bones; they would be bones if the territory was so that all the soft tissues were destroyed and the bone left. It would look like the original bone, but within the territory of the bone corpuscles, protoplasmic bodies would be found. That is one of the differences between Dr. Farrar and myself, why he was so offended. At a recent meeting, forty pieces of the thigh bones of the ox, that had been used at the kitchen, were here produced as specimens of necrosis. I could talk a month on that. Some parts of the bone are always carried away without spiculæ.

DR. VINCENT: As in the arm before anchylosis?

DR. ATKINSON: I doubt about anchylosis. What is anchylosis? Anchylosis means immobility of the joint. There are two kinds: one that is permanent, consisting in the solid union of the structures. But we have another kind—one in two hundred patients has the first kind, and all the rest the second kind—when it is only muscular paralysis which prevents motion.

DR. VINCENT: May not both be combined?

DR. ATKINSON: Yes, they are sometimes, and I want to impress you that books never tell you all the differences. They tell typical cases, but practically the cases look often very different. This case might have been well taken care of, if it had not been in the hands of incompetent persons who did not relieve the local mischief when first appearing.

DR. SEARLE: May I ask where?

DR. VINCENT: In the jaw.

DR. SEARLE: Is there pretty good evidence that there was local disturbance?

DR. ATKINSON: I presume you do not take this into consideration, and there are few who do: there is no local inflammation that does not depend on constitutional disturbances.

DR. VINCENT: The blood of that young girl is of a peculiar kind.

DR. ATKINSON: The finest blood is in the interior of the nervous system.

DR. SEARLE: If I understand right, you implied that the physician ought to have treated the case locally to have cured the whole child?

DR. ATKINSON: Certainly.

DR. SEARLE: How can you cure a constitutional disease by removing spiculæ?

DR. VINCENT: It is such a simple matter that any dentist in the room ought to have been capable of treating the case locally, as Dr. Atkinson says, but neglect by men who held high diplomas brought about the grave result.

DR. SEARLE: I am not satisfied yet. Was the necrosis of the jaw the consequence of the systemic septic taint, or was the necrosis the cause of the whole systemic derangement?

DR. ATKINSON: Necrosis is always systemic. We know nothing of the causes. The pabulum of the entire body was deteriorated; but it is reported that it started in the jaw. It is just as with a boil; you do not wait until it opens itself; we open as soon as we find out that it is going to result in necrosis of tissue.

DR. SEARLE: That is far from the point that I meant. I did not say necrosis, because it cannot yet have been necrosis. It is the first step that I meant before necrosis has set in. Please tell what course the physician should have taken?

DR. ATKINSON: When they found a local inflammation they should have cut down.

DR. VINCENT: Do you use setons? If any better or different way of draining the child's slough was known, I would like to know the method.

DR. ATKINSON: What you had to do was to take away what you could. Pus swallowed in the stomach never starts pyæmia. This only originates where vessels resorbe it and carry it into the system without its going through the stomach. Pus is a fine digestible food. What is pus? Nothing but dead blood corpuscles; and, do you not forget it, it is worth millions to the sick. When you talk about pus,

you generally speak of pus and ichor mixed together. Pus never stinks; it is as bland and sweet as an angel's breath. They have mistaken the idea of what gives the deterioration. It is the sulphuretted hydrogen and the ammonia, that result of retrograde metamorphosis, which produce the dreadful odor. We have smelt the breath of people dying from tuberculosis, and say that it is the pus which stinks; but it is the broken down tissue. That is where the pathologists are all afloat, and they should be put into chowder-mills to grind out the truth, so that we understand it like mathematics, and might be master healers in place of mere assumptionists of truth.

DR. VINCENT: SH_2 is one of the worst-smelling substances. Where I got it most offensively was from a darkey. He had a discharge where he wore his belt around his waist. The physicians and doctors were probing in all directions, and could not find the cause. I suggested that they look in the mouth. The next day I met the doctor on the walk, and he says: "Why would you look in that mouth —probably because you are a dentist." In the afternoon, the fellow came into my office, and I pulled out a tooth with the finger, and that was what caused the trouble. If they had continued as they did, I do not know where the case would have gone. He had been doctored for a long time, and had got pretty low. Through the folds of the muscles the pus had found its way down to the belt. The man recovered rapidly.

DR. ATKINSON: That corroberates what I said. The moment you remove the source of the mischief nature takes care of the result. I remember a case where the pus from a lumber vertebra discharged at the little toe. In such diseases you cut away till the burr comes into perfectly healthy tissue. I should prefer to cut away the tissue so as to get a decent form.

DR. VINCENT: I would like to say that I never cut at the outside as long as it can be done on the inside, if it is possible to do it without having any scar left.

DR. ATKINSON: That is a good criticism, because I myself never cut on the outside as long as possible. It is a mistake that a cut will leave any but first-rate scar-tissue, but you get third-rate tissue from inflammatory action alone.

DR. MORGAN: I would like to ask Dr. Atkinson how to detect if in a given case an inflammation is going to be severe enough to cause necrosis, and what the rule is for an operation.

DR. ATKINSON: There is no rule that I can give, no rule that any-

body can give—no more than you can give a man who is not an expert violinist a violin, and expect good music. I do not know how I come to diagnose myself, unless it is by a revelation to my consciousness. The chief thing is the dactylus eruditus, and that is the point. It requires fine, sensitive fingers to find out by touch the exact degree of hardness at the point of inflammation, when it is time to cut and where.

DR. SEARLE: I think it is the most disagreeable thing in the world that we should pursue an expectant course. I would not deny that Dr. Atkinson has the illumination to foresee the result, but I think the majority of intellects would not be thus endowed, and the only proper rule to be established is the expectant rule. It is very seldom that these cases prove to be so serious in their results.

Adjourned till 2 o'clock P. M.

PROCEEDINGS OF THE CENTRAL DENTAL ASSOCIATION OF NEW JERSEY, MAY 25, 1882.

A regular meeting of the Central Dental Association of New Jersey (incorporated), was held at the office of Dr. S. C. G. Watkins, Montclair, N. J., May 25, at 8 P. M., some forty members and visitors present, including several from New York city, Philadelphia and Brooklyn. Programme: Essay, by Dr. W. G. A. Bonwill, D. D. S., of Philadelphia—subject, Bonwill Crowns. Essay, by C. A. Marvin, D. D. S., of Brooklyn—subject, Artistic Talent necessary to Eminence in Mechanical Dentistry. Essay, by Dr. G. A. Mills, of Brooklyn—subject, Pericementitis, its Manifestations in the Oral Cavity and its Serious Effects upon the General Health. (This paper was read by invitation before the Kings County Medical Society, Brooklyn, and Dr. Mills was invited to re-read it at this meeting).

Dr. Bonwill's paper was a revision of one published by him in the Cosmos, on the introduction of his new porcelain crown. He stated that he had found this course necessary because of radical improvements which he had made, both in the construction of the crown and the pin. He regretted that the introduction of the first samples of his design was so premature, but now he felt that there could be some assurance given for their real excellence; yet there had been a creditable interest in them shown by the profession, as the sales had amounted to some 35,000. The paper treated principally of improvements in the pin, made of a combination alloy, admitting of a more perfect incorporation with the metallic paste, or (as he termed it),

gold alloyed amalgam, containing some 27 per cent. of gold. Although it is more expensive, yet he thought the results justified the extra cost. The under-cuts made in the crown he felt would prove of great value. The details (in all their minuteness) of setting the crowns were dwelt upon with much precision, and he emphasized the necessity of care and nicety of manipulation in order to achieve the best results. He evinced much earnestness in his declaration of the belief that the profession would accord to him the praise of producing a valuable auxiliary to them, and a boon to the public. By diagrams on a blackboard, he illustrated the mechanical principle of his work, which showed a marked understanding of mechanics. He was listened to with more than ordinary interest—as all men are who are honestly in earnest; and as yet they are not thick enough to do much harm by any excess of enthusiasm. Dr. Osmun, the president, said he had set some three hundred and sixty of these crowns, and knew them to be valuable. He said that he found difficulty in getting molars that he could make in any large sense useful. They were not large enough in their diameter, and the bicuspids were not short enough. Dr. Bonwill said he was trying to remedy that defect, and felt that he would succeed in forcing the manufacturers up to the demands. He spoke of the difficulty attending the introduction of these crowns in overcoming obstacles that tended to delay the best attainments. He urged the careful watching of all the crowns as they were selected at the dental depots, and as they found defects to throw them back on the dealers, who would then find it to their interest to try and produce a more perfect article. Dr. Meeker spoke favorably of the crowns.

Dr. Marvin's paper being next on the programme, a note from him was read, stating his disappointment in not being able to be present with his paper on account of sickness, and that he would hold himself ready to read it at any future time.

Dr. Mills was then introduced. He stated that he would not offer an apology for re-reading the paper which he had read before another body; that at the time he was invited by the vice-president, Dr. Watkins, he was in some doubt as to what he would be able to do, as he had a paper in preparation, but it was suggested that he re-read the one announced in the programme. He felt that it was eminently a useful subject to them, and if they could imagine themselves for a while a medical society, the construction of some of the sentences would seem more appropriate.

Dr. Stockton, of Newark, spoke in commendation of Dr. Bonwill's efforts in providing so successfully an artificial crown. He looked upon it as a step decidedly in the advance, and he thought that this subject of Dr. Mills' paper gave hope that ultimately we would succeed in that which all should desire—securing the roots as well as the crowns; and when this disease was brought under a larger understanding, and we became able to cope with this cyclone of destruction as a profession, we would have taken a fruitful step. He believed that more teeth were being lost by this disease than by any other, and he was truly glad that Dr. Mills was manifesting so much interest in it by urging it upon the attention of the profession and the world of people who are the sufferers from it. He said there was no subject in our calling that he felt a more lively interest in than this; it was the great field of the future for us to cultivate a knowledge of. He did not claim to know anything about it, but would do all he could to encourage Dr. Mills in achieving practical results by putting patients into his hands. He said he had sent patients to him already, and had an arrangement now with him to come to his office to treat a case of special interest to him, which Dr. Mills says is amenable to treatment. He was thankful to the doctor for his paper.

Several questions were asked by different ones in regard to cases. Dr. Mills answered them by saying that there were so many circumstances attending the variety of cases that he could not intelligently diagnose them or give a reliable prognosis. Success was attainable in degree. All that we did in our practice was under limitations. The disease might recur after treatment, but it would then be only incipient. Patients must understand that it was a specific disease, and when it did recur in any degree it should have the attention that we require of all our practice in order that we may be able to attain the best results. He said he was more convinced than ever that it would be some time before there would be a large number engaged successfully in this work; it was a field that required special culture to be prepared for.

A vote of thanks was given to Drs. Bonwill and Mills for the interest they had contributed to the meeting. This meeting evidenced a decided improvement in the Jersey dentists; they show that they are heartily in earnest, and alive to all that is helpful in a professional sense.

Dr. Watkins, with whom the society met, shows signs (and *tangible* ones) that he is a successful practitioner, indicated by the beautiful

Swiss chalet, in a spot of charming scenery, and which exhibits taste of no ordinary quality. His office is a gem of an arrangement, so complete in all its appointments: A reception room, an operating room, and a room containing a second chair and for various purposes, with a *multum in parvo* of a laboratory—seemingly nothing wanting (but the usual disorder and dirt). All these rooms are located in the basement, looking to the south and east out upon a view of art and nature combined which can only be diverting and elevating to the patients, and which is in such contrast to the back-yard views in our cities, which suggest almost anything but heaven, but rather a *cat*-egorical bedlam with promiscuous under-garments of both sexes.

A bountiful collation was served and duly appreciated. Pity on those whom we hear say they are surfeited with dental societies!

AMERICAN MEDICAL ASSOCIATION.

The Section on Dentistry (Sec. 7), of the American Medical Association, met in the Council Chamber, St. Paul, Minn., Tuesday, June 6, at 3 P. M. Dr. D. H. Goodwillie, of New York, called the meeting to order. The section then nominated the following officers, who were subsequently elected: Chairman, Dr. D. H. Goodwillie, New York city; Secretary, Dr. Truman W. Brophy, Chicago.

Dr. Allport offered a resolution that a committee be appointed to whom all papers to be read before the society be referred. Drs. Allport, Brophy and Williams were appointed on this committee.

Dr. William D. Kempton, of Cincinnati, presented a paper on "Oral Hygiene," of which the following is a synopsis:

"From the beginning, the sole aim of practitioners was to discover a cure for disease, and, although sometimes harmful, the medication received the credit. Now, one of the main objects of practitioners is to prevent disease. The profession is indebted to specialists for many, if not most, of these discoveries, as they are more apt to arrive at definite results than those whose attention is occupied with the whole field of medicine. To be successful in the fullest sense of the term, the discoveries of these specialists must be received heartily by the profession at large. Oral Hygiene is a subject of great importance, and the evils arising from the neglect of it are far-reaching. Good, strong teeth are beautiful as well as serviceable, and indicate care; but when we find one whose teeth resemble the charred trunks of stately trees after the fiery scourge has visited the forest, and whose

breath is suggestive of a cesspool, we ask, 'Whence comes this sad havoc?'"

Dr. Kempton then entered into a careful analysis of the teeth, giving their elements and functions, and the "acid theory" of Dr. Geo. Watt. Then followed a list of the evils resulting from diseased teeth, showing that the whole system is more or less affected by their presence.

Dr. Kempton's paper closed with directions for preventing decay in teeth: "Physicians should feel it their duty to point out to their patients the results of neglect of the teeth, and no medical college should consider its curriculum complete unless some attention is paid to the teeth."

The paper was discussed at length by Drs. Williams, Talbot, Allport, Lawrence, Marshall, Goodwillie and others, after which the meeting adjourned until next day.

SECOND DAY, *June 7*.

The section met promptly at 3 o'clock. After the meeting was called to order, the secretary read a paper from Dr. Barrett, of Buffalo, describing a case of abnormal dentition, which he illustrated by plaster casts.

Dr. J. S. Marshall, of Syracuse, N. Y., then read a paper on "The Need of Dental Surgeons in the Army and Navy." He said: The government provides for the care of the soldier in all cases except where his teeth are concerned. Soldiers on the frontier, and sailors on a long cruise, have no opportunity of receiving dental services, no matter how much they may need such attention; and the disease must run its course, being turned over to the bungling of the hospital steward or some less competent person. The treatment of fractures or gun shot injuries of the lower jaw is the same as twenty-five years ago, being much behind the times. The objection to the appointment of dental surgeons in the army and navy is, that the amount of dental diseases is so small as not to require specially educated surgeons to treat them."

Dr. Marshall then gave some statistics showing the relative number of men in the army and navy who, in the years 1878 and 1879, were reported as having needed dental services; also, the opinions of the surgeons-general of the army and navy, Gen. Hancock, and Admiral Porter, relative to the appointment of such surgeons. The paper closed with the recommendation that a committee be appointed by this section to arrange a blank statistical report, covering all the dental

and oral diseases, and request the surgeons-general of the army and navy to incorporate them in the regular medical and surgical reports. The paper was discussed by a number, and Dr. Allport offered the following resolution, which was adopted:

Resolved, "That a committee of three be appointed by the chair to consider the subject of the appointing of dental surgeons in the army and navy; and that Dr. E. Maynard, of Washington, and the surgeons-general of the army and navy be requested to coöperate with this committee."

Drs. Allport, Marshall, and Williams were appointed on this committee. Dr. Lawrence then presented the following resolution, which was also adopted:

Resolved, "That the chairman of the Section on Dental and Oral Surgery of the American Medical Association appoint a committee whose duty it shall be to investigate the subject of food, including, as far as possible, mastication, insalivation, digestion, assimilation, and the habits of life, in its relation to embryology and development of the different tissues and organs of the human body, and to report at the next annual meeting."

After this resolution had been acted upon, the section adjourned until next day.

THIRD DAY.

The section convened, and was called to order by Chairman Goodwillie, at 3 P. M. By action of the association, the name by which the section is known was changed to the "Department of Dental and Oral Surgery," and as such it will be hereafter known.

The chairman appointed Drs. Lawrence, Talbot, and Kempton on the committee called for by the resolution of Dr. Lawrence, passed the day before.

Dr. E. S. Talbot, of Chicago, read a paper entitled "Injurious Effects of Mercury as used in Dentistry." The following are a few remarks of the speaker: "There can no longer be any doubt that amalgam fillings in teeth will sooner or later produce mercurial poisoning. The dire effects of this metal are not always seen immediately after the fillings are inserted, years sometimes elapsing before the injurious effects were felt and noticed." The history of two well-marked cases was here given by Dr. Talbot: "The amalgam fillings were removed and gutta-percha temporarily inserted, these in turn being substituted by gold; after which all symptoms of mercurial poisoning disappeared." A detailed account of a series of experiments made by the writer were presented and the subject was passed.

"How Dentists should be Educated" was the subject of a paper by Dr. W. W. Allport, of Chicago. After prefacing his remarks a history of dentistry in the past, Dr. Allport said: "The dental surgeon must be educated both in mechanical dentistry and dental surgery, for no disease can be intelligently treated without a knowledge of the histology, physiology and anatomy of the organs diseased, as well as the pathology, prognosis and rationale of the treatment employed to restore the parts to a healthy condition, and this is *medical science*. The successful dental surgeon mnst have a thorough medical education, in all its branches, supplemented by special instruction in dental surgery."

After listening to a paper on "Dental Science," by Dr. J. B. Lawrence, of New York, the section adjourned to meet in Cleveland the first Tuesday in June, 1883.

BUFFALO MICROSCOPIC CLUB.

The regular monthly meeting of the Microscopical Society was held Tuesday, May 9, at the Central School. . . . The name of Dr. William H. Slacer was proposed, and Mr. Thomas Granby was elected to membership; after which Dr. W. C. Barrett read an interesting paper on the "Bioplasson Doctrine," being the result of examinations made upon the structure of blood corpuscles in conjunction with Dr. Geo. E. Fell and Prof. Kellicott. The question at issue was the structure of the red and white blood corpuscle. Dr. Heitzmann, of New York city, claims to have seen certain appearances in the blood corpuscle—"a fibrillated net-work"—when immersed in a 50 per cent. solution of bi-chromate of potash. Dr. Barrett said he had seen many of these appearances, and gave illustrations of them on the black-board. He also advanced some new views relative to the granular motion inside the corpuscles.

Dr. GEO. E. FELL, who had worked with Dr. Barrett in these observations, and manipulated the instrument, had not so far seen anything corresponding to a fibrillated structure in the blood corpuscles. He rather claimed that the appearances observed confirmed the prevalent theory of a granular formation to the white blood corpuscles. He gave the method of procedure in the examination of the blood. The value of the different kinds of illumination as to central and oblique light with regard to observations of this character, was

shown. While oblique light was really necessary to a satisfactory definition of the *striæ* of the diatoms, for the observation of the blood corpuscle more central rays were required. The necessity of using the test objects of the microscope, to be assured of the correct working of the lenses, before satisfactory work could be performed, was commented upon. The powers used in these examinations were from 600 to 2,400 diameters. The objectives used were two of Spencer's 1-6 "duplex" of 118° and 119° balsam angle, and a 1-16 inch objective of Gundlach's.

Mr. JAMES W. WARD discussed the views presented. He did not coincide with Dr. Heitzmann, and stated that even were a fibrillated structure to be found in the blood corpuscle, we would be no nearer the end to be attained, viz: a knowledge of the structure of protoplasm than before. A new fact would be simply added to science.

Dr. BARRETT presented an interesting subject for consideration. He exhibited a series of slides, prepared by Mr. Miller, of Berlin, in which the latter claimed that the *dentinal tubuli* were filled with *bacteria* and *micrococci*—minute animal organisms, which caused the decay of teeth. Dr. Fell and himself had examined the slides and discovered the appearances set forth by Miller, but neither desired to state positively that they were these organisms. The theory heretofore held has been that the decay of teeth was of a chemical nature. If *micrococci* and *bacteria* are founded in the dentinal tubuli, it would tend to upset this theory, and undoubtedly be a great step in advancing the causes of many abnormal conditions of not only the teeth, but the human body at large.

One of the slides which Dr. Barrett exhibited created a new fact not, he thought, hitherto known to science. A slide made from a sound human tooth showed that the enamel and dentine were both penetrated by numbers of fungi of comparatively large size. Commencing at the periphery, these "spross pilz" had pierced the tooth substance diagonally across the enamel rods and the dentinal tubules to a considerable distance. It was not improbable that much of what in tooth caries had heretofore been considered inexplicable, might, in the light of Dr. Miller's observations, be readily accounted for.

Dr. FELL, who represented the Buffalo Club at Elmira, June 20, gave an account of the very successful soiree of the Elmira Microscopical Society. He stated that the people of Elmira were working with great enthusiasm to make the coming meeting of the American Society of Microscopists, to be held at Elmira in August next, the

most successful meeting of the society yet held. He also reported the meeting of the executive committee of the National Society at Elmira, Aug. 21st. From the character of the papers already offered, the scientific value of the meeting is certainly assured.

Dr. LUCIUS HOWE read a paper from Max Shultze, of Vienna, in which the latter coincided with Mr. Henry Mills and Prof. D. S. Kellicott relative to the structure of the fresh water sponge. Mr. Carter, of England, high authority on the history of the *Spongiadæ*, or fresh water sponges, had gracefully backed down and acknowledged his error in certain points of structure relating thereto.

Dr. BARKER, who had expected to present the paper of the evening, on Histology, owing to lack of time, was excused for the time being.

It may be well to mention that the regular meetings of the Microscopic Club are held the second Tuesday evening in each month, at the Central school building. Any one interested in the work of the Club, is cordially invited to attend the meetings.

LEE H. SMITH, *Secretary.*

The Microscope.

MERRIMACK VALLEY DENTAL SOCIETY.

The nineteenth semi-annual meeting of the Merrimack Valley Dental Society was held at the Parker House, in Boston, on Thursday and Friday, May 4 and 5, the president, Dr. R. R. Andrews, of Cambridge, in the chair. A committee was appointed to draft resolutions upon the decease of Dr. Morgan, of Gray, Me., and Dr. Perkins, of Amesbury, Mass.

The question of repairing gold fillings with other material was taken up and discussed.

Dr. C. H. Osgood spoke in favor of the use of amalgam for that purpose. He had used it ten years with success. He advised the use of rubber for a covering for the pestle in preparing the amalgam.

Dr. Wetherbee thought there was no objection to using amalgam for repairing gold fillings when it would not show. He thought where gold fillings needed repairing the most, was at the cervical wall, and this was due more to the making of deep undercuts than to the use of the mallet.

Dr. Baker asked what success members had met with in the use of adamantine stopping.

Dr. Searle had used it, but could not vouch for its durability.

Dr. Stockwell favored the use of gold and amalgam in the same cavity, stating, as the result of his observations, that the result attained was better than where one material alone was used, and wished to know—if this is true—why it is so.

Dr. Chandler said the gold absorbed surplus mercury.

Dr. Kidder said the silver in amalgam was the true cause of the blackness of fillings, and that the less silver used, and yet retain sufficient hardness, the better the filling would be.

Dr. Waters said the action of the acids upon the amalgam filling, instead of the tooth substance, is the reason for better preservation of tooth substance by amalgam.

Dr. Kidder read a paper on the use of Compound Fillings, and recommended the use of a solution of resin in ether for retaining the first piece of gold or gutta-percha, so as to avoid the making of retaining pits or undercuts at the cervical wall.

The question of "Transplanting and Replanting Teeth" was then discussed.

Dr. Waters spoke of his continued success in both cases.

Dr. Osgood objected to the practice of replantation, because of the danger of inoculating the patient with syphilis, citing a case where it had occurred.

Dr. Searle reported some successful cases of replantation in his practice.

Dr. Palmer was not in favor of transplantation. He cited a case of *plantation* of an upper incisor tooth, made from pitch-pine, and shaped to resemble the lost tooth, which was inserted the day after extraction, and remained four years.

The first part of the ensuing session was devoted to an exhibition of very interesting microscopical objects by Drs. Waters, Andrews, Wetherbee and Blodgett, the latter showing the circulation in the tongue of the frog, and Dr. Andrews exhibited some very fine specimens, showing the different stages of growth of the enamel organs in the embryo of the hog.

Dr. Dudley spoke favorably concerning the N. E. Dental Journal as a publication worthy of the support of the dental profession, and introduced Dr. Stockwell, who explained the objects and purposes of the Journal.

Dr. Dudley made an address upon the subject, "What shall be the Future of this Society," advising, among other things, that the name

be changed to the New England Dental Society, and that only annual meetings be held; that, the next meeting being the twentieth annual meeting, an effort be made to get together all of the old members of the society. The subject was discussed by various members, and an informal vote taken to ascertain the sentiment of the society as to the feasibility of adopting the proposed changes. The sentiment was found to be, with a single exception, unanimous for the proposed plan. A committee was appointed to make such changes in the constitution and by-laws as will be necessary in order to effect the changes suggested.

Dr. Stevens showed a disk punch used by him for the making of paper disks, and recommended it to the profession.

Dr. Dudley spoke of the advantage of the English artificial teeth over the American, because they are made of one body and can therefore be ground away and repolished without trouble. Dr. Dudley also recommended the use for casts the metal known as Spencer's metal.

It was voted that the next meeting be held in Boston, and that the evening session be devoted to a social meeting, with a collation.

THE RHODE ISLAND DENTAL SOCIETY.

The fifth annual meeting of this organization was held Tuesday, July 4, at Newport, at the office of Dr. S. E. Greene. There was a good attendance of members from different parts of the State. The annual report of the secretary showed a good condition of the affairs of the society, and the treasurer's report stated an increased balance in the society's funds. Essays were read by Dr. J. W. Smith, of Newport, on "Artificial Crowns," and by Dr. L. L. Buckland, of Providence, on "Work and Play." Both papers were carefully prepared, and they were listened to by the members present with pleasure and profit.

Officers for the ensuing year were elected as follows: President, Dr. W. H. Thornton, of Providence; Vice President, Dr. S. E. Greene, Newport; Secretary, Dr. L. L. Buckland, Providence; Treasurer, Dr. J. W. Smith, Newport; Librarian, Dr. W. L. Church, Providence; Executive Committee, Dr. G. H. Ames, Providence; Dr. A. D. Roberts, Woonsocket; Dr. J. W. Smith, Newport.

The society holds regular meetings on the first Tuesdays of January, April, July and October, in each year. After adjournment, such

of the members as could arrange to do so, joined in a dinner together at the Aquidneck, and later a smaller party started for the Rangeley Lakes, Maine, for a brief respite from the cares of practice.

HARVARD ODONTOLOGICAL SOCIETY.—The fourth annual meeting of the Harvard Odontological Society was held Saturday afternoon and evening, July 1, 1882, at Young's Hotel, Boston, the president, Dr. Eugene H. Smith, in the chair.

The annual address was delivered by Dr. Frank Perrin, followed by an essay by Dr. J. W. Smith, of Newport, R. I., who described a very ingenious method for "artificial tooth crowns." At the dinner remarks were made by the president, and toasts responded to by members of the society.

The following officers were chosen for the ensuing year: President, Eugene H. Smith, D. M. D.; Recording Secretary, F. E. Banfield, D. M. D.; Treasurer, Frank Perrin, D. M. D.

Executive Committee—F. E. Banfield, D. M. D.; D. F. Whitten, D. M. D.; E. C. Briggs, M. D., D. M. D.

F. E. BANFIELD, *Recording Secretary.*

EDITORIAL.

Some time since we wrote an editorial notice in relation to the appointment of Dr. R. B. Winder to the position of Dean of the Baltimore College of Dental Surgery, but by some mishap it got mislaid and was overlooked. Dr. Winder takes the place in this old college made vacant by the resignation of Dr. Gorgas. The announcement of this college may be found in the advertising columns of this number of the *Journal.* Dr. Winders' address is 140 Park avenue, Baltimore, Md.

We are very glad to be able to report that Dr. Marshall H. Webb is steadily, if slowly, gaining. At last accounts he was able to leave his bed for a few moments. In this number will be found an article from his pen which will be read with pleasure by all his friends, both for its own merit, and because it is a pleasing evidence of returning strength.

On account of the large amount of society reports, our *editorial* and other matter in this number must be, of necessity, limited. We cheerfully make room for them for two especial reasons: First, because of their value, and secondly, we are gratified to know that so many societies are disposed to make the *Journal* a "mouth-piece." We are sorry that any must lay over till next month.

A NOT QUITE SCIENTIFIC CRITIC.

The Ohio State Journal of July, 1882, contains in an article: A Scientific Editor—a criticism of my article on the Rare Metals. It is my habit not to answer criticisms unless they are good, and from this standpoint I would also refrain answering this criticism (?); but the authoritativeness with which errors in this article are paraded as test facts, deserves a careful answer.

I made the guarded and perfectly scientific statement that to the thinking chemist a decaying tooth is an "I do not know."

Dr. Watts, whom I suspect to be the critic, perfectly overlooks that I say "to the *thinking chemist*," and that the *chemistry of decay* is unknown. We all know a good deal about the histology, a trifle about the etiology, little about prevention, and much about treatment, but about the *chemistry of decay*, with the permission of the Ohio critic, we know nothing. The critic thinks that the time one is employed in a certain business gives any right to judge about things concerning the business in another line. A teacher of geology may never have traded in coal or iron-ore, yet he can give a far better opinion about the value, nature, etc., of the coal, than the tradesman who has been in the business for perhaps forty years in the store, whilst the professor studied and analyzed only about one day this coal, but may know thousand times more. This to give to the critic the point of difference between the chemist whose line of business is different from that of the microscopist or practical dentist, though working on the same object. The Ohio critic reasons quite youthfully in coming to the conclusion about the acid which dissolves the tooth:

"Only a few acids are ordinarily found in the fluids of the mouth. Let our friend, the 'scientific editor,' apply the logic of exclusion, or reduction to unity, to these, and he will soon find which are the guilty acids, whose guilt he can readily demonstrate by analysis. Take, for example, that variety of dental caries known as chemical abrasion. Several acids found in the buccal fluids do not corrode the teeth. These are ruled out at once. Then, in abrasion, no decomposed

tooth substance remains in contact with the diseased surface. The reagent is able to dissolve tooth material. The dentine not yet acted on is normal on the very outer surface of the abrasion. The agent must be able to dissolve earthy and organic matter with equal facility. This rules out sulphuric, nitric, hydrochloric, malic, citric and many other acids. Pushing the research still further, it is found that but two acids ever known to be found in the buccal fluids, are capable of dissolving all the tooth materials with equal facility, so that, as far as the action goes, all of the tooth is dissolved, and these two are lactic and acetic acids. If abrasion is found on the teeth of young persons it is generally due to the action of acetic acid, and if found with elderly patients, especially if they are rheumatic, or if they chew tobacco, the action is commonly caused by lactic acid. And when the abrasion is recent, it is not hard to find acetates or lactates, or both, in the mouth.

The same general principles may be applied to the consideration of each of the other three varieties of dental caries, but this item is already much too long."

May the reader judge himself about the beautiful logic in this passage.

First: We say a "decaying tooth." The critic speaks of abrasion, a relatively simple and easily explainable form of waste of the teeth, but no decay. Between abrasion and decay there is the same radical difference as between dissolving the skin by dipping it in caustic lye and losing it by an ulcer, a cancer, or some such histological-physiological process.

That lactic and acetic acids dissolve any easier the whole tooth-substance than hydrochloric acid, is wrong. If we employ the two acids concentrated, we do not have the natural conditions of the mouth; and if we give them weak, they are not superior to hydrochloric acid, etc.

How easily the author says: "With elderly patients, especially if they are rheumatic, or if they chew tobacco, the action is commonly caused by lactic acid."

How did the author prove lactic acid even in this case of abrasion —not speaking of decay—about which I wrote in my criticised article? Has he ever proved it? Please give us the receipt how to test exactly for lactate of lime in the mouth in these cases. We must confess we failed several times in attempting to test for small quantities of lactic acid when we knew it was there.* The critic seems to labor under the illusion that one of the couple of dozens of acids he remembers from

*Lactate of zinc, although the most characteristic salt, is little characteristic.

the chemical studies of his college time, must do the mischief, but all he can bring as proof of it is words, no facts—then he only speaks of *abrasion.*

But now to *decay.*

My opinion about *decay,* that is, the common ulcer-like cavity, has been clear since I commenced to study chemical fact in relation to dentistry. A priori, one would think a chemist ought to be in favor of all the paraphernalia of acids, alkalis, etc.; but only the chemist who "knows all about it" (?), that is, who thinks science never advances, will bring his chemical work-shop into the cavity of the tooth.

I consider decay a physiological process—the older school would severely criticise me for not saying pathological process; but the difference between these two words is only subjective, not exact and scientific. The decay is an *ulcer* only modified by the difference of tissue. The chief factor probably in starting, and more probably maintaining of the ulcer are low organisms belonging to the protists, like bacteria, leptothrix, etc. The lime-salts are not dissolved, or at least only a fraction, but are carried away and comminuted mechanically.

What give the tooth its hardness? "What an ignorant question!" Well, please, doctor, to answer it well in the next number, and I should feel glad if we agree. The explanation of the difference between the decayed mass and the healthy tooth depends on this answer.

But a few experiments!

Experiments are what we want, not empty words. Dr. Stockwell lately extracted sixteen teeth from one mouth, all badly decayed. I scraped the decay carefully from the cavities of the teeth and made three sets of experiments.

First: I determined the lime-salts in the outer black mass, which was quite soft.

Second: I determined the amount of lime-salts in the soft white mass at the bottom of the cavity.

Thirdly: I took a small splinter of dentine from every tooth, from which I took decay and determined the lime-salts.

RESULTS.

	Actual weight.	*Lime-salts.*
1 Black soft decay,	21.6 mgrs. ($\frac{1}{3}$grain)	62 p. c.
2 White soft powder,	10.4 "	73 p. c.*
3 Healthy dentine of same tooth,	26.4 "	72 p. c.

*These figures are not quite correct, as some zinc-oxide was mixed with the lime-salts, probably from an old oxy-filling—1 mgr.=$\frac{1}{60}$ grain.

All the specimens were first most carefully dried in the water bath, so as to have a standard, and the weight refers to this dry state. The balance was excellent—giving $\frac{1}{20}$ mgr. or $\frac{1}{1200}$ of a grain—and the whole done as carefully as possible.

These experiments—omitting No. 2—teach:

1. That the lime-salts are only slightly diminished in the decayed mass compared with the healthy tooth; hence, that no acid can have produced that state of affairs, because every acid dissolves so very much easier lime-salts than connective tissue.

2. That the chief difference between healthy and decayed dentine is at the outside, but not at the boundary-line of decay.

I made some further experiments:

Not the very slightest traces of an acetate were in the decayed masses.

The lime-salts were *the same* in the decayed masses as in healthy dentine—carbonates and phosphates. How easily acetic acid dissolves the phosphate of lime of the tooth, and how it would disappear from the decayed mass if any such or a similar acid was acting, was shown by the following experiment:

A mass of decay (about $\frac{1}{3}$ of a grain) was treated with ten drops of vinegar—made artificially from acetic acid and water to keep it free from phosphates—for two minutes; after this time it had dissolved enough phosphate of lime to give a strong, yellow turbidity with molydate of ammonia. Thus far, facts. I shall give more if the critic will have told me what makes the teeth hard.

Who was the "sutor ultra crepidam?" The Ohio critic, who thinks he can have a weighty word in *real* modern chemistry with the few acids at the disposal of his chemical knowledge, or I, who know well my "crepida," and did ply nothing but chemistry without entering into practical dentistry, in which my Ohio critic, as far as I know, may be as strong and careful as I am in chemistry; he in chemistry and I in practical dentistry would make a poor show, but the points here under discussion are neutral ground—physiology, histology, biology, etc., and there the quality of work rather counts than the time one has spent for it, or the mechanical skill of long and valuable experience.

CH. M.

OPERATING TABLE AND LABORATORY.

TO ARREST HEMORRHAGE.

So accustomed are dentists to apply the various remedies directly to the rupture, in case of hemorrhage, that a remedy to be taken *internally* may seem at once as grossly heterodox. External applications, however, do not always succeed as readily as we could wish, to say the least. Cases are by no means rare where hemorrhage, following the extraction of teeth, is exceedingly troublesome, and defies for hours all external applications. Acting upon the advice of a prominent physician we have, of late, used gallic acid internally and, thus far, with prompt and gratifying success.

If the flow is considerable and persistent, we take of the crystals about one-half teaspoonful to which we add three or four ounces of water; thoroughly mix and administer at once. This is to be followed by teaspoonful doses of the same strength every fifteen minutes as long as necessary. The physician referred to has used it with uniform success for many years in all cases, from hemorrhage of the lungs to nose-bleeding. It is perfectly safe and harmless thus given. The acid so affects the blood as to produce coagulation upon its coming to the air, thus forming a hard clot at the point of rupture.

So satisfactory has been our experience with it, and so uniformly successful is its use in general medical practice, that we feel confident of its advantage in dentistry. Try it and report. S.

ZINC vs. BABBITT METAL.

Thirty years ago a partner of mine, Dr. D. H. Goodno, after experimenting with all the metals ever used for dental dies, and finding nothing satisfactory, at last thought that "Babbitt metal," then but little known, might answer the purpose. He tried it, and found, to his great relief, that it was just what was needed. We adopted it at once, and after having used it exclusively all these years, can say it is a *perfect thing* for the purpose. And why should it not be? It has all the requirements needed, viz.: *non-shrinking, hardness, toughness*, smoothness, and melting at a low temperature. Now, while *zinc* is *hard*, its shrinkage is a serious objection. *Type-metal* does not shrink, but is too brittle.

But it is necessary that the Babbitt metal should be made from a

correct formula. Much that is sold, while it answers the purpose for which it is generally used, viz.: bearings for machinery, is made in such a manner that it is too soft for dies. Metal that costs less than forty cents per pound will not answer, for it can't be made and sold for less.

To ensure a good article, make it yourself, as follows:

Copper, 1 part;
Antimony, 2 parts;
Tin, 8 parts.

Melt in a crucible, *in the order named*, turning off as soon as the tin is dropped in, and remelt. The S. S. White Co. is now making from the above formula.

For counter die, use seven parts lead and one part tin, and don't turn too hot; coat the die with whiting.

For convenience, moisten the sand with sweet-oil, as it is then always ready for use, and there will be no danger of your cast being spoiled from excess of moisture.

I seldom make the second die, even in sharp, irregular, lower cases. The plate will *always* fit the plaster model, and if that is correct, will, of course, fit the mouth. It is time that zinc was banished from dental laboratories, books of instruction and colleges. There is no more need of it than of the "fifth wheel to a coach." On the other hand, it is simply a nuisance, as any one will say after following the above directions half a dozen times.

L. P. HASKELL, Chicago, Ill.

Probably every operator has noticed frequent cases, where ether is being administered, of marked, early and transient, or what is termed the *primary action* of the drug. We do not remember to have read any extended account of operations being performed under this condition, and so jot down these few lines. We have made no extended experiments in this direction, though we believe the field a promising one, and trust that this article may be the means of leading some to enter it, or of bringing thoughts or suggestions from those who have already explored the same. Of course, only slight or minor operations can be performed under this condition, but it is possible many times to remove several teeth with but little if any consciousness. We have removed one or two teeth, without the least consciousness, in three minutes or less from the commencement of inhalation to com-

plete restoration to consciousness. The primary action usually results in from one to five minues, and experience best teaches one when it is *just the right time to operate.*

We would suggest, first get the patient perfectly quiet from excitement and (if they are willing to take the risk of a little pain, the prospect is all the more favorable) present the ether rapidly. Watch the pulse, respiration, and the whole appearance; in fact, be *wide awake.* It is surprising how quickly the *appearance* of *complete* anesthesia will be produced. Have the patient held firmly, and pay no more regard to manifestations of pain than you would under the action of nitrous oxide. If you are sure the patient really suffers, a few more inhalations will usually bring another period of unconsciousness, when the operation can be completed. In our experience, there are cases when we much prefer this method to the use of gas, both as regards safety and also the comfort of the patient. For a difficult case in extracting several teeth, we would of course not advise this method; neither would we in other cases where the indications are that the patient would be unmanageable, but simply in those cases where your judgment tells you it is the thing. Let members of the profession be heard from through our columns.

To prevent nausea when taking impressions let the patient rinse the mouth thoroughly with camphor and water; five drops of spirits of camphor to a wine-glass of water is sufficient in most cases. Have used it so long and so successfully that we supposed everybody used it until a few days since, when in conversation with several dentists we learned that no one of the number had ever tried it. One suggested that "it perhaps gave the mucous membrane something else to think of for the time being."

What I am told about mechanical and chemical action and compatbility, is no object for observation for me; neither of these expressions is correct. ***So long as a tooth is alive the foreign body that comes in contact with dentine will irritate.*** As to chemical action, I do not know whether such a thing does exist in the relation between the dentine and the filling material. Where there is plenty of living matter, as in deciduous teeth, the irritation upon a solid filling will be more intense than upon a filling of soft, protective material. I recommend light filling material in deciduous teeth, for the reason that we have more living matter in them. HEITZMANN.